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Eugenics
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EUGENICS AND THE PHYSICIAN.*

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I am glad to have the opportunity to speak to you as physicians on the subject of eugenics, because there is no class of persons which is, or should be so much interested in the subject and no other that can do so much to advance it as physicians. It is a matter which appeals especially to physicians, because of their peculiar, and peculiarly intimate relations, both with individuals, with families, and with communities. As an intimate with individuals the subject of eugenics should appeal to the physician, because he is apt to know his subject better than any one else, even the person himself. He makes himself acquainted with every part of the patient's body and comes to learn his mental traits at a time when they are apt to be revealed as nakedly as his body. Above all, he learns the reaction of the subject's body to parasites, to wear and tear, to environment as no one else can, because he can view these interesting phenomena from the comparative standpoint. He learns that people are all different in their physical conformation, in their mental makeup, in their reactions to environment, and to treatment. To the thoughtful physician his profession must be an eternal question mark. He has asked himself a score of times the question: Why are persons so different; how can we account for these marvellously diverse combinations of characteristics?

In the second place, eugenics is peculiarly a physician's subject, because of his intimate relations with, and knowledge of families; and eugen-

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ics is, first of all, a family matter. The family physician soon learns that the striking differences he sees between people are family differences. He sees certain peculiarities of structure repeated in the children of one fraternity or in parent and child. One family will be characterized by prevalingly high stature, another by low. In one family, father, mother, and all children are slender; in another, some at least are stout. One family is distinguished by frequent occurrences of twins. The hair of one family is characterized by curliness, in another family by red color, or premature graying, or, possibly, by being spotted; the hair tends to be profuse and coarse over the trunk in one strain; another has almost no body hair. Peculiarities of fingers tend, in striking fashion, to run in a family; whether the peculiarity is double jointedness or polydactylism, or brachydactylism or crooked fingers and toes. Aquiline or pug nose, lobed or lobeless ears, blue or brown eyes, supernumerary teeth, absence of second dentition, absence of particular teeth, cleft palate, harelip, partial hermaphroditism—all these peculiarities of form are family traits. The family physician sees also idiosyncrasies of movement, behavior, speech, response, frequently recurring. There is the family, many of whose members have prevailingly quick, jerky movements; others, whose movements are prevailingly slow and deliberate; the family of students; and the family none of whose members can make progress at school; the family whose children are quiet and unexcitable, and the one in which the young people are irritable and boisterous; families that are matter of fact in conversation, and those that are brilliant; families with a tendency to licentiousness, and those that are chaste; families of geniuses in particular lines, and families of dullards in all. Every genealogist, if not every physician, knows how special capacities lie in particular strains. The physician knows also how not infrequently in a given family a particular disease runs a peculiar

course; so that in taking up a case in a new family his first inquiry may well be: What is the usual course of this disease in your family? Thus in both normal and in pathological states, in the physical and the mental realms, families with very diverse inheritable traits are met with—they constitute potential strains or species, which are, however, not often realized because of the fact of free intercrossing which is constantly hybridizing the incipient species.

In view of these facts, it seems to me that a full and free recognition of family specific traits will be of assistance to the physician in his therapeutics. The physician is, indeed, hardly in a position to treat a patient intelligently until he knows the family well. I knew a man, a recent immigrant, who began to suffer from sore throat, and then of an inflammation of the vocal cords. The physician who treated him did not regard the case as serious, but the man did, and told me that four of his sisters had died of tuberculosis located in the vocal cords. Though he lived a hygienic outdoor life and from the beginning of his trouble slept in the open air, yet in six months he, too, was dead. A knowledge of the family history would have given the physician surer ground for prognosis, if not for treatment. I once had a workman on my place—a Norwegian. He had been away for a time and came back with a high fever, and went to bed. Temperature rose to 103.5° F. The attendant physician suspected typhoid fever, but none of the other symptoms were there until, after two or three days, abdominal spots appeared, confirming his diagnosis. But, meantime, the fever had almost entirely disappeared and the fellow insisted that he felt perfectly well, and only wanted to get up and go to work, which the doctor properly enough denied. In speaking with him about the disease, the man admitted that he very likely had typhoid, as other members of his family had had it in a very light form.

In diagnosticating insanity, family history is often of great assistance. A friend of mine knew of four sisters, three of whom had a mental trouble that was diagnosed as manic depressive insanity. The fourth was examined by another alienist, who gave a different diagnosis, but later, when the four sisters were examined by the same person, it was recognized that the trouble was of the same nature in all. The old family physician, the country doctor, in a long settled and much inbred community, has certain advantages in diagnosis over the physician in a large city hospital, because the latter gets a great mixture of races and does not know the typical reactions or symptoms of each to each disease germ, or to other untoward condition, while the former knows his families.

In another respect a knowledge of eugenical principles is of importance to the physician, and that is in giving advice in regard to the desirability of proposed marriages from the point of view of the offspring. This is a matter where the physician exerts a great influence, both because he is so often consulted about marriages, and because he can often intervene with authority, even when not consulted. No doubt in this respect, as in many others, the physician is coming to exercise in the home that authority which the New England clergymen formerly held, and which the Roman Catholic priest holds to-day. The questions about marriage are, I presume of two sorts: One is whether a venereal disease, past or present, is to disqualify from marriage; on this topic I do not propose to speak here. The second sort concerns the inquiry whether the hereditary influences of the parents are such as to insure healthy, well endowed offspring. I know that people think seriously on such matters, for in the past two weeks I have received a score of letters on the subject; and an advertisement has appeared in one of the magazines, offering the services of the subscriber, at two dollars a service, to those who want enlightenment in their specific

cases. My experience in the matter demonstrates to me that the doubt whether any people will be influenced in their matings by eugenical considerations is not justified. We may expect when people more generally realize that precise information can often be obtained on the subject that concerns them so intimately, and about which they think so much, that they will seek it and to a certain extent be guided by it. It is encouraging to see how many people approach the marriage relation with the clear appreciation of the fact that it means *children*, and that satisfactory children can come only from adequate germ plasm.

Let us now consider certain principles which must guide us in replying to these inquiries, and then the specific answers that may be given to some of them. And first of all, we must keep in mind that we do not inherit from our parents, nor our grandparents, nor from any person. Our parents and we are derived and inherit from the same germ plasm, and that is why we have traits in common. Though legally I am the father of my son, biologically he is my younger half brother, by another mother. Second, we do not, strictly, inherit traits or characteristics. It is not the strict truth, but a figure of speech, when I say my daughter has my nose. The only thing which parent and child inherit in common is the chemical constitution of the germ cells—the determiners for such and such elements of the nasal and premaxillary bones, of the triangular and pinnal cartilages and of the eight or more nasal muscles. It is because we have the same determiners for some or all of these elements that we have the same kind of a nose. Third, nearly all characters or their determiners are *separately* inheritable. One person is not able to count, but can read; another reads fluently, but has no idea of cause and effect; another cannot distinguish colors, but can read fine print at a great distance. Because a person is a fool in some matters it does not follow that he may not be a genius in others.

Fourth, traits are of two kinds, positive, which depend on the presence of a determiner in the germ plasm; and negative, which depend upon the absence of some determiner. Now every child has two parents; consequently it has two sets of determiners. If both parental germ plasms carry the determiner for any positive trait, then that trait has a double impulse to development and it develops fully. If neither parental germ plasm carries the determiner for a positive character (as is shown by the absence of this character from the soma), then the offspring will not have it. If one parent carries the determiner in all of its germ cells, and the other carries that determiner in none of its germ cells, then all of the children will have the trait, but it will be simplex and the character, accordingly, will be less fully developed. If such a person marry one without the trait, then half of their offspring will be without the trait and half will have it, simplex, again.

The special application of these principles will depend, first of all, upon what traits are positive and what are negative. Thus, Huntington's chorea is a typical positive trait. If it is in the germ plasm it shows in the soma, and if it is in the soma of the parent some of the children will have it, but a parent without the trait, though of choreic stock, will have unaffected children. The fact that the stock to which the person belongs contains *this* highly inheritable and undesirable trait, is no reason for denying marriage to such a normal person. To this same class belong also presenile cataract, displaced lens, glaucoma, retinitis pigmentosa (probably), night blindness, epidermolysis bullosa, tylosis of palms and soles, monilithrix, telangiectasis, chronic family jaundice, hypospadias, and cryptorchidism, polydactylism, syndactylism, brachydactylism, double jointedness, and crossed toes. In all these cases the normal person from such stock may not be denied marriage; but affected persons will have at least half of their children similarly affect-

ed; and, if the disease is an important one, they should not have children.

On the other hand, many conditions are due to a defect. A normal person may carry the defect in his germ cells, but he will transmit it only if one of these defective germ cells unites with a similarly defective germ cell from the other parent. It makes no difference whether the trait has appeared in the past few generations of ancestors or not. The great difficulty of advising in this class of cases is due to the fact that, since the germinal defect is hidden, its transmission is less easily guarded against. Where such a hidden potentiality is feared, the first caution is to avoid cousin marriage. The second caution is to avoid marrying into a strain with the same defect, even though the proposed consort does not show the defect. If a study of the family history of the partner shows the same defect, it is desirable that the engagement be broken. Examples of such traits are gigantism, or excessive growth in stature, imbecility or marked mental defect of any kind, epilepsy, manic depressive insanity, dementia præcox, alcoholism, cerebral palsy of infancy, hereditary ataxy, congenital deafness, otosclerosis, harelip, and cleft palate (probable; but further data are much desired), nonresistance to cancer (probably), Thomsen's disease, nonresistance to tuberculosis and to catarrh inciting causes. You see that many of the commonest diseases belong to this category. The possession of these diseases is often considered a bar to marriage, and yet the case is very different with them from what it is with dominant diseases. For the latter must reappear in at least half of the children of an affected parent, while the former may not, and in appropriate mating *cannot* reappear in the bodies of the offspring of such an affected parent. To be sure, the *germinal* defects are continued; but if care is taken in the matings of later generations, the defect may be kept from appearing somatically. No doubt it were better for epileptics, imbeciles, insane, and

consumptives not to marry; but if there are strong reasons in any case why a person so affected should marry, then by mating with a strong strain the progeny will not show the parental defect.

Finally, there is a third set of cases, the sex limited. These appear typically in one sex only, the male—and are transmitted in a peculiar fashion known as the knight's move form of heredity. That is to say, affected fathers have ordinarily no affected children, but the defect lies in the germ cells of the daughters and, when they, in turn, become mothers, it reappears in half of their sons. The reason is, in the case of these sex limited traits, the sons inherit only from the germ plasm of the mothers, but the daughters inherit from both parents, and, consequently, if one parent is normal the daughters, also, will be normal, though capable of transmitting the defect to their sons. The following conditions are inherited in this fashion: Color blindness, atrophy of the optic nerve, multiple sclerosis, ichthyosis, muscular atrophy, and hemophilia. Advice in such cases is this: Affected men should not marry if the defect is decidedly undesirable, since their daughters, though somatically normal, will carry the defect in half of their germ cells. Women from an affected father or who have an affected brother, should not marry; but normal sons may marry into outside strains with entire impunity. They carry no taint of the defect, even in their germ cells.

Beside the question whether to marry or not, one of the commonest inquiries is as to cousin marriages. Such marriages are not to be denied off-hand, so far as present knowledge goes. Excellent men and women have arisen in the past from such matings—Charles Darwin is a striking example. But the shores of life are strewn with the wrecks of such marriages, and the reason is that such marriages frequently bring together germ cells with *the same unit defects*. For instance, congenital deafness may be due to any one of a score of defects

in the auditory apparatus; consequently two deaf mutes are not necessarily deaf because of the same defect and, so, each may bring into the combination what the other lacks, and as a result all of the children may hear. But if the two deaf mutes be cousins, or if cousins marry who belong to a deaf mute strain, the chance of producing deaf mute offspring is vastly increased—such marriages are highly dangerous for the offspring. Similarly, if the strain contains feeble-mindedness, epilepsy, insanity, a tendency toward tuberculosis, nonimmunity to cancer, marriage of cousins should be strongly advised against. If there are children, they will curse the folly of their parents, or the State, already groaning under a heavy burden of taxation for the support of incompetents, will receive an addition of one or two or more wards.

In still another respect a knowledge of eugenical principles is of importance to the physician—as an intimate and esteemed adviser of the family. More and more is the family physician destined to take the place of the clergyman, and even, perhaps, the teacher as an adviser concerning both the physical and the mental development of the child. Too often are our systems of hygiene and our systems of education built upon the false assumption of the essential similarity of people. The thoughtful family physician and the thoughtful mother of a family are well aware of the falseness of this assumption. Adequate advice cannot be had from the glittering generalities of books of hygiene or of psychology. The question of the proper physical and mental education of a child is an individual and a personal question; and an adequate answer to the question can be had only by considering the probable innate capacities of the child as revealed by a careful study of his family history. If such a study shows, for instance, an inherited lack of resistance to the tuberculosis germ, then, *from the beginning*, the child's environment must be such as to strengthen such means of resistance as he may have and to

avoid such conditions as tend to reduce his resistance. Is there danger of dementia præcox developing? then from the earliest possible time he must be trained in practical work and in objective exercises. Is the family weakness a digestive one? then attention must early be paid to diet and to physical exercises that shall best combat the weakness before it has shown itself. Similarly, in regard to mental education. We have some reason for believing that great special abilities, like special mental defects, are in heredity due to the absence of a determiner, an absence of that inhibitor which prevents us all from being great musicians, great painters, great orators, and so on. If this is true there is no use trying to train a person, both of whose parents are great musicians, to become, let us say, a civil engineer. Similarly, it would be a waste to plan to make a preacher out of a child with inventive ability in both parental strains. We are not yet in a position to predict for each child of a family which of the family characteristics he may show, for we know well that full brothers and sisters usually differ greatly. But just as the keen horticulturalist who knows his plants, can tell even from the seedling which of several adult possibilities are present, so the eugenist should be able to predict the potentialities of the child from the *germs* of its behavior. No doubt the day will come when every child who comes for the first time to school will bring with him a record of family traits which he will present to his teacher to assist the teacher in the task of educating him; but in the meantime the family physician is the one best suited to advise with parents about the education of children on the basis of eugenical laws.

Finally, the physician is interested in eugenics because of his peculiarly intimate relation to the State; i. e., to organized society. Good and bad are merely social terms. Physical goodness is strength, and physical equipment adequate to effective work for the community; physical badness

is physical inability to do one's work in the community. The cripples, the tuberculous, the narcotic subjects are physically bad. Mental goodness is ability to react in normal fashion to stimuli, to live the normal mental life. Mental badness is possession of mental defects such as interfere with one's normal place in the community. The physically and the mentally incompetent, being unable to care for themselves, have to be cared for at great expense to the community. Not only that, but their defects often cause great loss of property and life; in fact, when these socially inadequate become numerous enough in a community, civilization disappears, as in many parts of Hayti. Thus, the absence of color sense in the locomotive engineer formerly caused many deaths, because the engineer could not recognize the signals. Many a murder, if not most murders, have been caused by persons incapable of distinguishing the moral quality of an act. Many a conflagration has been started by a person who could not see why the gratification of his desire for excitement was not a sufficient justification for the act. Many a rape, if not all, has been done by those whose makeup lacked the inhibitors necessary for self control. Religious teachers and secular teachers alike are without effect in reducing these disasters and these crimes. It is to the physician that the State has to look for its protection. And the physician knows that the bad physical and mental conditions are *bred*; that we have reached our present elevated position in civilization by the process of eliminating bad family strains, and that if we persist in our crazy policy of protecting the weakest strains from the action of a natural selection, while permitting them to breed, our nation, too, will soon be numbered among those that were great. Would that physicians might rise to the responsibilities of their profession; or that the State would rise to a full appreciation of its dependence on the profession. For theirs is a work higher than that of the sani-

tary official who enforces the laws of public hygiene, for their care is that of *race hygiene*. The *preservation* to later generations of our traits of mechanical insight and skill, pertinacity, honesty, sense of duty, foresight, and good judgment—the *elimination* of feeble mindedness, epilepsy, insanity, sex hyperesthesia, strong craving for narcotics, lack of moral sense, and of the appreciation of cause and effect, upon these the future of our country depends far more than upon a large navy. And the physician who leads in the warfare against those venereal diseases that sterilize, alas! not only the unfit; the physician who lends his powerful influence to prevent unfit matings and secure the segregation or sterilization of the socially unfit; and the physician who is successful in encouraging fit matings and a high fecundity of the best families; such will do more to render our position among the nations impregnable, and permit the continuance of the arts of peace and the progress of science, than an admiral or a general.

AN APPEAL TO PHYSICIANS.

Just one word more, of a very practical nature. If it has been possible to make important advances during the past few years, it is because so many persons have voluntarily placed at the service of students of heredity such a fine lot of carefully compiled data. But there are many matters concerning the inheritance of various traits that are still obscure. The Eugenics Record Office has been established at Cold Spring Harbor, N. Y., for the purpose of collecting and analyzing such data; it seeks to meet the need of a clearing house for data concerning inheritable traits and the innate capacities of the different "families" or blood lines in America. On account of their intimate relations with families physicians are in a position to observe the occurrence of interesting family traits; and it will usually be easy to secure the cooperation of the families to the extent of gaining their

permission to have the case reported to this office, in order that it may be filed with like cases and be made, with them, the basis of statistical studies. The Eugenics Record Office, on its part, will be glad to furnish printed schedules for such data, and to furnish collaborators with the printed results that flow from such studies. I may add that, at the present moment, we are making a study of heredity of harelip and cleft palate. The published family histories leave much to be desired. We are convinced that we must interview the families concerned and are in a position to do so. What we desire is that physicians, especially those in rural communities, who know of families in which more than one case of harelip or cleft palate has occurred, will kindly inform the writer. They may rest assured that any such information, or information on other topics, will be held as confidential, that no names will be published, and that the information will be used solely to advance our knowledge of the origin of the trait and the way its recurrence in the offspring may be avoided.

